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Claims

1 1. (Twice Amended) A method for determining the position of a mobile
2 station located in a coverage area of a base station in a radio system and for using
3 location information, in which method the base station comprises equipment for
4 receiving signals from the same mobile station simultaneously by at least two antenna
5 beams directed in different directions, the method comprising:
6 measuring signal levels of signals received from a same mobile station by
7 different antenna beams of said base station,
8 comparing the signal levels of the signals received from the same mobile station
9 by the different antenna beams,
10 determining a direction to the mobile station in relation to the base station on the
11 basis of a relations between the signal levels measured for the different antenna beams,
12 and
13 calculating a distance from the mobile station to the base station on the basis of
14 a timing advance, given to the mobile station by the base station and propagation speed
15 of the radio signals, wherein said distance and said direction is used for making a
16 decision whether or not said mobile station should be transferred to another base
17 station by a handover.

1 5. (Amended Thrice) Base station (BTS1) of a radio system, which base
2 station comprises:

3 antenna equipment for receiving signals from a certain mobile station
4 simultaneously by at least two antenna beams directed in different directions,
5 measuring equipment for measuring the signal levels of the signals received by
6 the different antenna beams,

7 equipment for defining a timing advance for the mobile station which is in radio
8 connection with the base station to compensate for a time lag caused by the distance
9 between the mobile station and the base station, and

10 calculation means which are responsive to the measuring equipment for
11 determining the direction from the base station to the mobile station on the basis of the
12 relations of the signal levels measured for the different antenna beams, and which
13 calculation means comprise equipment for calculating the distance between the base
14 station and the mobile station on the basis of the timing advance defined for the mobile
15 station and the propagation speed of the radio signals,

16 wherein said calculation means are adapted to transmit said direction and said
17 distance further in the system in order to be used for making a decision whether or not
18 said mobile station should be transferred to another base station by a handover.